Date Form Completed: October 24, 2011 **General Site Information** Nebraska Region: Region 7 City: Hastings State: CERCLIS EPA ID: NEN000704351 CERCLIS Site Name: Garvey Elevator Year Listed to NPL: NPL Status: (P/F/D) 2005 Brief Site Description: (Site Type, Current and Future Land Use, General Site Contaminant and Media Info, Site Area and Location information.) The Site consists of contaminated soils and groundwater beneath an operating 8-million bushel capacity grain storage facility (facility) and an associated groundwater contaminant plume approximately four miles long that extends in an easterly direction from the facility. The facility consists of a concrete elevator head house and silos, flat storage building, steel grain storage bins, and associated buildings (maintenance shop, office building, and chemical storage shed). The primary contaminant in the soils and groundwater is the volatile organic contaminant (VOC) carbon tetrachloride (CCl₄), which was used from 1959 to 1985 as a grain fumigant. The facility is located immediately southwest of the city of Hastings, Nebraska on property that is zoned light industrial. The property zoning and land use is expected to remain unchanged for the foreseeable future. The Site consists of two Operable Units. Operable Unit 1 (OU 1) is the area of soil and groundwater contamination generally within the boundaries of the 22-acre parcel on which the facility operates. OU 2 is the associated groundwater contaminant plume that extends east-southeast from OU 1 approximately four miles in the direction of groundwater flow. The majority of OU 1 is surrounded by agricultural land, with a sparse distribution of commercial and residential properties. Contaminant distribution in the 115 ft thick vadose zone using discrete depth soil gas sampling indicates a widespread contamination at the 70 ft depth. At this depth, practically a large portion of the 22-acre OU 1 is found to contain CCl₄ in the soil gas at concentrations greater than 500 µg/m³. The highest CCl₄ level observed in recent soil gas sampling was 79,900 µg/m³. Contamination in the groundwater at OU 1 is primarily within the upper and intermediate aquifer zones of the approximately 110 ft thick aquifer. The CCl4 groundwater contamination (i.e. > MCL) at the OU 1 source area is distributed across a broad portion of the 22-acre site, with the width of the source area being approximately 2,800 ft in the direction normal to groundwater flow. The crosssectional area through which contaminated groundwater is migrating from the source area is approximately 2,800 ft x 30 ft = 84,000 ft². Results from a 2010 sampling event indicate that CCl₄ concentration as high as 1,300 ug/l in the groundwater at the downgradient side of OU 1. OU 2 is the approximately 4-mile long by 1-mile wide CCl₄ contaminated groundwater plume that emanates from OU 1. Land use in the areas above the plume is a mix of residential, agricultural, industrial, and commercial. A total of 60 private well users impacted by CCl₄ contamination have been connected to the municipal supply since the start of cleanup activities at the site. The sampling event conducted in March 2011 identified CCl₄ at a concentration of 530 ug/l in a monitoring well located more than 1.5 miles downgradient from OU 1. **General Project Information** Remedial A72Z Type of Action: Site Charging SSID: Operable Unit: OU₁ CERCLIS Action RAT Code: Is this the final action for the site that will result in a site construction completion? Yes X No Will implementation of this action result in the Environmental Indicator for Human Exposure \times No Yes being brought under control?

Response Action Summary

Describe briefly site activities conducted in the past or currently underway:

The former Garvey grain elevator first came to the attention of the Nebraska Department of Environmental Quality (NDEQ) in July 1994, when Garvey Elevators, Inc. notified NDEQ of a release of organic solvents and the presence of groundwater contamination at its grain storage facility. In October 1994, Garvey reported to NDEQ that according to its sampling results, its monitoring wells, water supply well serving the grain storage facility, and several nearby private water supply wells were contaminated with CCl₄ at levels that exceeded the MCL and were as high as 300 µg/l.

In April 1995, Garvey met with NDEQ to present some preliminary site characterization results and to petition for entry into the Voluntary Cleanup Program (VCP). The only contaminant of concern identified was carbon tetrachloride, the highest concentration of which was observed to be 29,943 µg/l in monitoring well MW-3B. Garvey also described its efforts of alternate water provisions (i.e., reportedly either a new well in an uncontaminated portion of the aquifer or hookup to the municipal water supply) for private water supply well users. The potential need to install a soil vapor extraction (SVE) system to address soil contamination in the unsaturated zone was discussed. In June 1995, NDEQ notified Garvey of its acceptance in the VCP.

In September 1995, Garvey met with NDEQ to present additional site characterization results and groundwater modeling results, and to propose actions to address the soil and groundwater contamination on its property. Soil sampling at the grain storage facility detected only trace quantities of VOCs. It was estimated that the soil gas contamination was spread across more than 500,000 ft² at the grain storage facility and that more than 55 million cubic feet of soil was impacted. Of the 36 monitoring wells on the Site, CCl₄ was detected in 15 of the wells at concentrations greater than 1.0 μ g/l. The highest measured concentrations of CCl₄ were found in the immediate vicinity of the elevator, with the highest measured of 29,943 μ g/l. CCl₄ was detected only in the dissolved phase. In a well located approximately 5,500 east-southeast of the elevator, CCl₄ was detected at 80 μ g/l.

In late 1997, the city of Hastings notified NDEQ that CCl₄ was detected in municipal well #13 located 1,500 ft northeast of the former Garvey property at 5 μ g/l, which is equivalent to the MCL (see Figure 3). In November 1997, the city of Hastings reassigned municipal well #13 for emergency use only, and it has been effectively shutdown since that time.

In January 1999, Garvey completed construction of and began operating a groundwater extraction and treatment (GET) system and an SVE and treatment system (Figure 3). The systems were intended only to treat contaminated soils at the source area and prevent groundwater migration from the source area. The systems were not designed to address that portion of the groundwater contaminant plume that had already migrated off to the east-southeast of the grain storage facility. The GET system consisted of five wells screened in the shallow aquifer. Extracted groundwater was treated by an air stripping tower. After treatment, the treated water was reinjected into two deep injection wells located to the west of the elevator. The SVE system consisted of five wells screened in the unsaturated zone from approximately 20 to 50 ft bgs and three wells screened in the unsaturated zone from about 60 to 110 ft bgs. The extracted soil vapors were treated by a catalytic oxidation unit and scrubber prior to discharge to the atmosphere.

In May 2002, Garvey notified NDEQ that that they would not sign the NDEQ RAPMA Memorandum of Agreement (MOA), which would have required cleanup of not only the source area, but also the groundwater contaminant plume stretching eastward from their grain storage facility. Following this development, in October 2002, NDEQ requested EPA's assistance in performing a removal site evaluation to identify the full extent of the groundwater contaminant plume.

In response to NDEQ's request for EPA's assistance, EPA initiated removal actions. These actions included monitoring water quality and providing alternate water supplies to impacted private well users and operating the

existing GET and SVE systems. On April 27, 2005, EPA proposed the Site for listing on EPA's NPL. The Site was listed on the NPL on September 14, 2005.

On October 7, 2005, Garvey entered into an Administrative Order on Consent (AOC) with EPA (CERCLA Docket No. 07-2005-0215). The removal activities included the identification of, monitoring of, and alternate water provisions for private residential/business wells and an evaluation of the effectiveness of the SVE and GET systems in containing the source area. Garvey was also required to conduct an RI/FS to further assess the nature and extent of groundwater contamination and to evaluate potential remedial actions to address the contamination.

During the period October 2005 to April 2008, Garvey and its contractors performed a portion of the activities described in the AOC. Under the terms of the AOC, Garvey was to operate the SVE and GET systems. However, Garvey did not demonstrate that it could reliably maintain and operate the GET and SVE systems and did not complete characterization of the nature and extent of contamination downgradient of the source area.

On March 27, 2008, Garvey filed a voluntary petition for liquidation pursuant to Chapter 7 of the United States Bankruptcy Code in the United States Bankruptcy Court for the Northern District of Texas, Fort Worth Division. Following this development, in April 2008, EPA directed Garvey and its contractors to halt work at the Site.

EPA initiated fund-lead removal actions on May 19, 2008, to address the immediate threat to human health posed by the contaminated private wells and to implement source control measures to prevent further impacts to the groundwater at the source area. These activities, which are ongoing, include providing alternate water systems or municipal water hookup for impacted and potential impacted residential/business private well users. It also includes source control measures of maintaining and operating the existing SVE and GET systems and enhancing these systems as necessary. Operation and maintenance of the GET and SVE systems continues to date, and these activities will be taken over by this interim remedial action.

On September 26, 2008, EPA expanded the scope of removal actions to include fabrication of an enclosure for the existing GET and SVE systems, extension of municipal water supply main lines to impacted private well users, and connections of residences to the main lines. To date, EPA has extended approximately 1.25 miles of municipal water supply main lines and connected more than 15 residences whose private wells were impacted. With the exception of the one residence, all impacted private well users have been connected to the municipal water supply. EPA continues to maintain a whole-house carbon filtration system at the single residence still utilizing private well water.

In June 2010, the interim action Record of Decision (ROD) for OU 1 was signed. This interim ROD for OU 1 addresses contaminated soil and groundwater beneath the facility. Contaminants dissolved in the groundwater beneath the grain storage facility are migrating off OU 1 in the general direction of groundwater flow. Contaminants in the soil at OU 1 have the potential to continue to leach contaminants into the groundwater. This Interim ROD specifically addresses the unacceptable risk from exposure to the groundwater. Site-wide groundwater contamination, and source area soil contamination posing unacceptable risk through pathways other than migration to groundwater, will be addressed in the Final ROD for the Garvey Elevator Superfund Site.

The selected interim remedy for OU 1 includes the following components:

- Continued operation and maintenance of the existing groundwater extraction and treatment (GET) system.
- Expansion of the existing GET system, if necessary, to prevent or mitigate the migration of contaminated

groundwater at OU 1.

- Continued operation and maintenance of the existing soil vapor extraction (SVE) system to mitigate the leaching of contaminants from the unsaturated zone to the groundwater.
- Periodic monitoring to evaluate the performance of the GET and SVE systems.
- Institutional controls which restrict the use of contaminated groundwater beneath the property formerly owned by Garvey.
- Reinjection of treated groundwater to the aquifer or making treated groundwater available for reuse for irrigation, aquaculture, or other purposes.

The selected interim remedy will permanently and significantly reduce the toxicity, mobility and volume of the contaminants of concern (COCs) at the Site. The selected interim remedy is protective of human health and the environment because it:

- Prevents exposure to contaminated groundwater at OU 1 source area.
- Prevents further migration of the contaminated groundwater plume from the OU 1 source area.
- Prevents or minimizes the release of contaminants from the unsaturated OU 1 source area soils to the groundwater within portions of the OU 1 source area.
- Restores groundwater at the OU 1 source area to its beneficial use within a reasonable time frame, when combined with the final remedy for the OU 1 source area soils.

The Remedial Design (RD) to implement the interim ROD at OU 1 was completed September 30, 2011.

Specifically identify the discrete activities and site areas to be considered by this panel evaluation:

The activities to be considered by this panel evaluation are the activities that were described in the RD (duration of one month), the activities necessary to operate and maintain the GET and SVE systems for a period of two years, and activities related to performance sampling.

The activities described in the RD are as follows:

- Replace of existing flow meters with magnetic flowmeters;
- Make minor upgrades to electrical infrastructure;
- Update programmable logic controller (PLC) programming for system operation.

Briefly describe additional work remaining at the site for construction completion after completion of discrete activities being ranked:

The additional work to be carried out to achieve construction completion includes the following: 1) Feasibility Study for a final remedy for both OU 1 and OU 2, 2) Final Record of Decision to address the entirety of OU 1 and OU 2, 3) Remedial Design for final remedy; and 4) implementation of the final remedy at OU 1 and OU 2. Based on current information it appears that the interim remedy for which funding is currently being requested, will not require expansion (only continued operation) to address OU 1 in a final remedy.

Response Action Cost

Total Cost of Proposed Response Action:

(\$ amount should represent total funding need for new RA funding from national allowance above and beyond those funds anticipated to be utilized through special accounts or State Superfund Contracts.)

\$621,000

Source of Proposed Response Action Cost Amount:

(ROD, 30%, 60%, 90% RD, Contract Bid, USACE estimate, etc...)

The source of the cost to construct is the Engineering Cost Estimate for the RD. The source of operating and maintenance costs for the 2 year period following construction are estimated based on a combination of current costs currently being incurred by EPA removal in the operation and maintenance of the GET and SVE systems, as currently configured as well as currently negotiated rates on existing task order for activities such as sampling and analysis, report writing, and electronic data deliverable preparation.

Breakout of Total Action Cost Planned Annual Need by Fiscal Year:

(If the estimated cost of the response action exceeds \$10 million, please provide multiple funding scenarios for fiscal year needs; general planned annual need scenario, maximum funding scenario, and minimum funding scenario.)

FY2012 \$288,000 FY2013 \$208,000 FY2014 \$125,000

Other information or assumptions associated with cost estimates?

Provided above

Readiness Criteria

1. Date State Superfund Contract or State Cooperative Agreement will be signed (Month)?

March 2012

If Non-Time Critical, is State cost sharing (provide details)?

N/A

3. If Remedial Action, when will Remedial Design be 95% complete?

RD was complete September 30, 2011.

4. When will Region be able to obligate money to the site?

March 2011

5. Estimate when on-site construction activities will begin:

March 2012

6. Has CERCLIS been updated to consistently reflect project cost/readiness information?

Yes

Site/Project Name:

Garvey Elevator Superfund Site

Criteria #1 - RISKS TO HUMAN POPULATION EXPOSED (Weight Factor = 5)

Describe the exposure scenario(s) driving the risk and remedy. Include risk and exposure information on current/future use, on-site/off-site, media, exposure route, and receptors:

Carbon Tetrachloride (CCl₄) - "Likely to be carcinogenic to humans" under the *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a). Chloroform (CHCl₃) - *Likely to be carcinogenic to humans by all routes of exposure* under the Proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1996; U.S. EPA, 1999). The SLAR exclusively assessed on the groundwater exposure pathway. The scenario evaluated in the SLAR considers a resident with a private well that would provide water for all their domestic uses. In order to remain conservative, this private well would be located in the most contaminated part of the plume immediately downgradient of the OU 1 source area. Table 2 presents the COCs and EPCs for CCl₄ and CHCl₃. The 95 percent upper confidence limit (UCL) of the arithmetic mean of the sampling results was used as the EPC for CCl₄ and CHCl₃. The EPCs for CCl₄ and CHCl₃, are 816 μg/l and 135 μg/l, respectively.

Scenario Time Medium: Exposure Med		Future Groundwate Water from	700	nking Well				
Exposure	Chemical of Concern	Concentration Detected			Frequency	Exposure Point	Exposure Point Concentration	Statistical
Point		Min	Max	Units	Detection	Concentration	Units	Measure
Groundwater: Direct	Carbon Tetrachloride	35	1600	μg/l	13/13	816	μg/l	95% UCL
Contact	Chloroform	ND	150	μg/l	8/13	135	μg/l	95% UCL

Estimate the number of people reasonably anticipated to be exposed in the absence of any future EPA action for each medium for the following time frames:

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<u>MEDIUM</u>	<2yrs	<10yrs	<u>>10yrs</u>
GW	99	NA	NA

Discuss the likelihood that the above exposures will occur:

This interim action for OU 1 is for a period of operation of two years until a final remedy for OU 1 and OU 2 is implemented. The above estimates of reasonably anticipated exposures are based on several assumptions. Assuming the 2800 ft wide plume emanating from OU 1 is allowed to migrate from OU 1 at the linear groundwater flow velocity of approximately 0.7 ft/day for a period of two years, the plume would cover an area of 1,430,800 ft². There are no institutional controls in place downgradient of OU 1. Assuming residential development in 1 acre parcels, approximately 33 residences could be established, with each having a private well. Assuming occupancy of 3 persons per residence, 99 persons could be impacted if the action is not taken.

The <10yrs and >10yrs scenarios were NA because this interim remedy is only planned for a period of two years, at which time the final remedial action to address both OU 1 and OU 2 will be initiated.

Other Risk/Exposure Information?

None

Site/Project Name:

A72Z / Garvey Elevator Superfund Site

Criteria #2 - SITE/CONTAMINANT STABILITY (Weight Factor = 5)

Describe the means/likelihood that contamination could impact other areas/media given current containment:

Downgradient groundwater will be impacted by OU 1 source area groundwater and soil contamination if this remedial action is not performed. CCl₄ present in the OU 1 source area soils will migrate to the groundwater and have the potential to cause exceedances of the MCL if the remedial action is not performed.

Are the contaminants contained in engineered structure(s) that currently prevents migration of contaminants? Is this structure sound and likely to maintain its integrity?

The GET and SVE systems, as currently configured, prevent the migration of contaminants from the OU 1 source area and prevent further contribution to the OU 2 downgradient contaminant plume. Minor mechanical, electrical and programming upgrades to the existing system are necessary for reliable operation. Without these upgrades, funding for operating and maintenance costs, and performance monitoring (i.e. groundwater sampling, water level monitoring, and interpretation), the GET and SVE systems will not prevent migration of contaminated groundwater off the OUI 1 source area to downgradient areas.

Are the contaminants in a physical form that limits the potential to migrate from the site? Is this physical condition reversible or permanent?

No.

Are there institutional physical controls that currently prevent exposure to contamination? How reliable is it estimated to be?

Not currently. EPA is in negotiations with the current property owner on language in a proposed deed restriction for the OU 1 source area.

Other information on site/contaminant stability?

None

Site/Project Name:

A72Z / Garvey Elevator Superfund Site

Criteria #3 – CONTAMINANT CHARACTERISTICS (Weight Factor = 3)

(Concentration, toxicity, and volume or area contaminated above health based levels)

List Principle Contaminants (Please provide average and high concentrations.):

(Provide upper end concentration (e.g. 95% upper confidence level for the mean, as is used in a risk assessment, or maximum value [assuming it is not a true outlier], along with a measure of how values are distributed {e.g. standard deviation} or a central tendency values [e.g., average].)

<u>Contaminant</u>	*Media	**Concentrations		
CCl ₄	GW	816 ug/l [95% UCL]		
CHCl ₃	GW	135 ug/l [95% UCL]		

(*Media: AR - Air, SL - Soil, ST - Sediment, GW - Groundwater, SW - Surface Water)

(**Concentrations: Provide concentration measure used in the risk assessment and Record of Decision as the basis for the remedy.)

Describe the characteristics of the contaminant with regards to its inherent toxicity and the significance of the concentrations and amount of the contaminant to site risk. (Please include the clean up level of the contaminants discussed.)

Carbon Tetrachloride (CCl₄) - "Likely to be carcinogenic to humans" under the *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a). Chloroform (CHCl₃) - *Likely to be carcinogenic to humans by all routes of exposure* under the Proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1996; U.S. EPA, 1999).

The values associated with cancer risk are more conservative than values associated with noncancer risk; therefore, they were used for this evaluation. Noncancer risks were not evaluated. The following formula can be used to derive an estimate of the excess individual lifetime cancer risk due to exposure to carbon tetrachloride or chloroform:

Cancer Risk = $(EPC \times 1E-06)/Tap$ water Screening Level

Considering CCl₄, the excess cancer risk over a lifetime of residential exposure at the EPC of 816 μ g/l is approximately 4.1E-03. Similarly, for CHCl₃, the excess cancer risk over a lifetime of residential exposure at the EPC of 135 μ g/l is approximately 7.1E-04. These estimated risk values consider the risk contributed by each individual COC. The cumulative risk due to the presence of multiple COCs was not calculated. Both of these estimated risk values exceed the upper end of EPA's risk range of 1.0E-06 to 1.0E-04, indicating that response actions are warranted.

Summary of Carcinogenic Risk for Future Private Well Users							
	Contaminant	Concentration Range		Frequency	_		
Medium		Min	Max	of Detection	Exposure Point Concentration	Statistical Measure	Carcinogenic Risk
Groundwater	Carbon Tetrachloride	35 µg/l	1600 µg/l	13/13	115 µg/l	95% UCL	4.1 in 1,000 (4.1E-03)
Groundwater	Chloroform	ND	150 µg/l	8/13	12.7 µg/l	95% UCL	7.1 in 10,000 (7.1E-04)

Notes:

µg/l - micrograms per liter

ND - Non-detect

Min - Mimimum concentration detected in samples

Max – Maximum concentration detected in samples

95% UCL - 95 percent upper confidence limit of the arithmetic mean of the sampling results

Cleanup Levels for OU 1 of the Garvey Elevator Superfund Site					
	Groundwater ⁽¹⁾		Gas ⁽²⁾ g/m³)		
Contaminant	(μg/l)	Fine-Grained (3)	Coarse-Grained (4)		
Carbon Tetrachloride	5	54,000	77,000		
Chloroform	80	1,500	2,100		

Notes: (1) EPA Drinking Water Standards Maximum Contaminant Level

- (2) Calculated using the soil PRG and the assumption of equil brium partitioning. Derivation is discussed in the Final Interim Data Summary report (2009).
- (3) Fine-grained material defined as the upper 85 ft of loess and interbedded alluvium beneath OU 1.
- Coarse-grained material defined as the Pliestocene sands and gravels from 85 ft to the water table.

Describe any additional information on contaminant concentrations which could provide a better context for the distribution, amount, and/or extent of site contamination. (e.g. frequency of detection/outlier concentrations, exposure point concentrations, maximum or average concentration values, etc)							
None							
Other information on contaminant characteristics?							
None							
Site/Project Name: A72Z / Garvey Elevator Superfund Site							
Criteria #4 – THREAT TO SIGNIFICANT ENVIRONMENT (Weight Factor = 3)							
(Endangered species or their critical habitats, sensitive environmental areas.)							
Describe any observed or predicted adverse impacts on ecological receptors including their ecological significance, the likelihood of impacts occurring, and the estimated size of impacted area:							
The Screening Level Ecological Risk Assessment completed April 2011 concluded that current Site conditions do not pose a threat to ecological receptors.							
Would natural recovery occur if no action was taken? If yes, estimate how long this would take.							
Other information on threat to significant environment?							
Site/Project Name: A72Z / Garvey Elevator Superfund Site							
Criteria #5 - PROGRAMMATIC CONSIDERATIONS (Weight Factor = 4)							
(Innovative technologies, state/community acceptance, environmental justice, redevelopment, construction completion, economic redevelopment.)							
Describe the degree to which the community accepts the response action.							
In general, individual members of the local community and the current property owners of the former Garvey Elevator facility were concerned about the Site, but were supportive of the preferred alternative. During the public meeting and comment period, no disapproval of the preferred alternative was expressed by individual members of the local community. There were no local officials in attendance at the public meeting. Only one comment letter was received during the comment period.							

Describe the degree to which the State accepts the response action.

The Nebraska Department of Environmental Quality (NDEQ) concurs with the remedy selected in the Interim ROD. The SSC is currently being drafted and it is expected that NDEQ will sign the SSC and agree to a state cost share of approximately \$62,000.

Describe other programmatic considerations, e.g.; natural resource damage claim pending, Brownfields site, use of innovative technology, construction completion, economic redevelopment, environmental justice, etc...

Implementation of the remedial actions laid out here in this interim remedy will prevent further migration of groundwater contamination from the OU 1 source area to downgradient areas. The operation and maintenance of this OU 1 interim remedy will be incorporated into the final remedy for OU 1 and OU 2.